

STUDIES ON THE OCCURENCE, AVAILABILITY AND MARKETING OF CRAB (*SCYLLA* SPP.) BY CRAB MONITORING PROGRAMME OF RATNAGIRI DISTRICT, SOUTH KONKAN COAST OF MAHARASHTRA, INDIA ¹

VIVEK R. VARTAK^{2,3}, NARENDRA D. CHOGALE² AND SHARAD G. BELSARE²

¹Accepted September 28, 2007

²Marine Biological Research Station, Peth Killa, Ratnagiri 415 612, Maharashtra, India.

³Present address: Taraporevala Marine Biological Research Station, New Administrative Building, Third Floor, Bandra (E), Mumbai 400 051, Maharashtra, India. Email: vivekvartak_arombrs@yahoo.com

A short-term (45 days) crab (*Scylla* spp.) monitoring programme was conducted in 51 villages from five coastal talukas of Ratnagiri district. The survey revealed that two species, namely *Scylla serrata* and *S. tranquebarica* are found along the coast of Ratnagiri districts where the former is abundant. The indigenous techniques of crab farming and various crab harvesting methods were studied in the survey. The survey also conveyed the message of conservation of crabs along the coastal villages of Ratnagiri district. The details are discussed in the paper.

Key words: crab monitoring, *Scylla tranquebarica*, *Scylla serrata*, marketing

INTRODUCTION

Crab fishery in India is yet to be recognised as a major fishery despite the abundant occurrence of edible crabs all along the Indian coast. There are about 600 crab species occurring in Indian waters; only a few of them are used for human consumption. The most important among these are *Scylla serrata*, *S. tranquebarica*, *Protunus pelagicus*, *P. sanguinolentus*, *Charybdis crusiata* and *C. feriata* (pers. comm.). Among these, the *Scylla* spp., commonly referred to as the Mud or Green Crab form the mainstay of the crab fishery of India and are economically important.

Crabs belonging to the genus *Scylla* inhabit brackish waters, such as mangrove areas and estuaries, throughout the Pacific and Indian oceans from Hawaii, South Japan, Taiwan, Philippines and Australia to the Red sea and South Africa (Chhapparg 1957; Motoh 1979; Aiyun and Sillang 1991). In India, crabs are found abundantly on the east and west coasts in Kerala, Tamil Nadu, West Bengal and Orissa. In Maharashtra, two species of genus *Scylla* have been recorded, namely *S. serrata* and *S. tranquebarica*, along the Konkan coast. The former is a well known species along the Konkan coast, but the latter has been recorded only recently by the faculty of Konkan Agricultural University in the north Konkan coast of Maharashtra (Vartak *et al.* 2002; Singh *et al.* 2005). However, information about its occurrence in the Konkan coastal region is far from complete. Detailed information is essential as this species is important from the aquaculture point of view. Hence, a short-term crab monitoring programme was conducted along Ratnagiri district with the aim of collecting information on the occurrence of *S. tranquebarica* along the coast. This study also aimed to collect information about the places where the seed of this crab (*Scylla* spp.) is available; this may be beneficial for farmers in carrying out culturing and fattening activities.

MATERIAL AND METHODS

This study was undertaken in a cluster of 51 villages spread over five coastal talukas of Ratnagiri district, namely Ratnagiri, Rajapur, Dapoli, Mandangad and Guhagar (Fig. 1). Crab collectors were personally interviewed for obtaining information on the occurrence of the *Scylla* spp., its seed availability and its marketing. In addition, information was collected on existing crab culturing and fattening practices if any. All the information was collected and entered in the proforma of Appendix 1.

RESULTS

Resources

The crab monitoring survey revealed that both *Scylla serrata* and *Scylla tranquebarica* occur along the South Konkan coastal region of Ratnagiri district. *S. serrata* occurs plentifully as compared to *S. tranquebarica*. *Scylla serrata* are collected throughout the year, and are abundant during the monsoon season. The ratio of availability of both the species differs with each taluka, e.g. it is 1:4.1 in Mandangad and 1:8.2 in Ratnagiri. *S. serrata* and *S. tranquebarica* are locally known by different names according to the region. The region-wise local names for the two crabs are given in Table 1. This nomenclature is mainly based on the coloration of the crabs. In some areas *S. serrata* is called 'Lal Kurli', which means 'Red Crab', and *S. tranquebarica* is called 'Hirvi Kurli', which means 'Green Crab'.

Methods of Crab harvesting along the Ratnagiri coast

Crabs are caught by various methods along the different regions of Ratnagiri district. As *S. serrata* is found in plenty along the coast, no special efforts are taken to catch them,

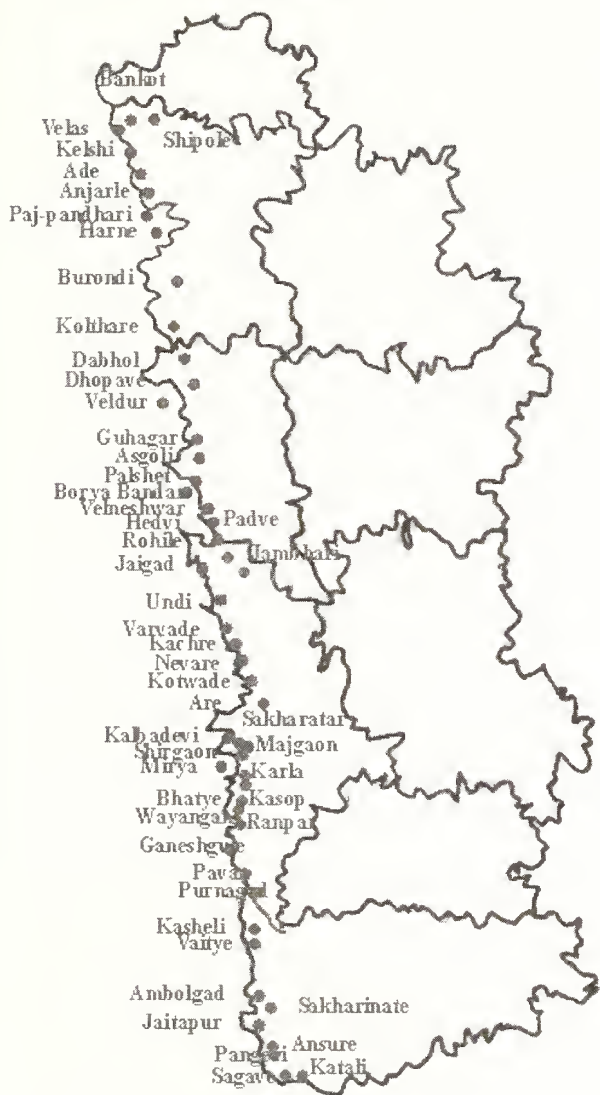
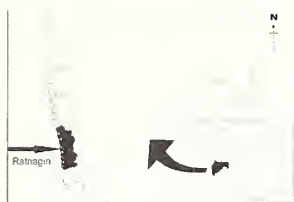


Fig. 1: Map showing different villages of Ratnagiri district surveyed under short-term crab (*Scylla* spp.) monitoring programme

whereas catching *S. tranquebarica* is different and expensive. *S. serrata* is generally caught in a lift net. This net is made up of an iron ring to which a polyethylene mesh net is fastened to form a bag. The net is baited with trash fish, goat ears or small pieces of shark flesh. The bait, which is tied to a twine attached inside the net near the circular ring, attracts the crabs towards the lift net. The crabs get attracted towards the bait and start feeding on the bait; lifting the net at this moment

Table 1: Local names of *Scylla serrata* and *Scylla tranquebarica* in different villages of Ratnagiri district

Name of the Taluka	Name of the village	Local name of species	
		<i>Scylla serrata</i>	<i>Scylla tranquebarica</i>
Mandangad	Shipole	Kali kirvi	Fakirin khadpi
	Bankot	Kali kirvi	Khadpi
	Velas	Khekda	Vaslya
	Kelshi	Kirvi	Khadpi
Dapoli	Ade	Kirva	Dhandya
	Anjarle	Chamori	Kirva
	Paj Pandhari	Kirvi	Khadpi
	Harne	Kirvi	Khadpi
	Burondi	Kirvi	Khadpi
	Kolthare	Chamori	Kirva
	Dabhol	Chamori	Kirva
Guhagar	Dhopave	Kurli	Khadpi
	Veldur	Kurli	Khadpi
	Guhagar	Kurli	Khadpi
	Asgoli	Kurli	Khadpi
	Palshet	Kurli	Khadpi
	Borya Bandar	Kurli	Khadpi
	Velaneshwar	Kurli	Khadpi
	Hedavi	Kurli	Khadpi
	Rohile	Kurli	Khadpi
	Padave	Kurli	Khadpi
	Ratnagiri	Jambhari	Kurli
Jaigad		Gobadi lal	Gobadi hirvi
Undi		Chavari	Khajan
Varavade		Kali kurli	Hirvi kurli
Kachare		Kurli	Khadapi
Nevare		Kali kurli	Bhat
Kotwade		Khadpi, Khajan	Kurli, Bhat
Are		Khajan	Bhat
Kalbadevi		Khajan	Bhat
Sakharatar		Khajan (lal)	Bhat (hirvi)
Majgaon		Kali kurli	Safed Kurli
Shirgaon		Khajan	Bhat
Mirya		Khajan	Bhat
Karla		Kala kurli	Gorya Kurli
Bhatye		Kurli	Kurli
Kasop		Khajan	Bhat
Wayangani		Khajan	Bhat
Ranpar		Kurli	Kurli
Ganeshgule		Kurli	Bhat
Pavas		Kali Kurli	Narli
Purngad	Kali Kurli	Hirvi kurli	
Rajapur	Kasheli	Kurli	Kurli
	Vaitye	Kurli	Kurli
	Ambolgad	Kurli	Kurli
	Sakharinate	Lal kurli	Khadpi kurli
	Jaitapur	Kurli	Kurli
	Ansura	Kurli	Kurli
	Pangeri	Kurli, Kali kurli	Kurli, Hirvi kurli
	Sagave	Lal kurli	Khadpi kurli
	Katali	Lal kurli	Khadpi kurli

traps the crabs. The time of lifting the net from the fishing area is decided on the basis of experience and judgment.

Another method of catching *S. serrata* is hand picking. In this method, the fishermen check the holes made by crabs during low tide. The presence of crabs inside the hole is confirmed by checking the soil inside the hole. If the soil is soft, there is a possibility of presence of a crab inside the hole. After confirming the presence of a crab in the hole, the fisherman widens the hole using an iron rod. After digging a little distance the fisherman checks the hole using his hand, which is covered with a cloth for protection against crab bites. If the crab is present, it is taken out of the hole with great care and skill.

Gill nets are used to catch *S. tranquebarica* from estuaries. Gill nets are laid at the bottom in which crabs get entangled. The entangled crabs are removed from the net. A crab with all appendages fetches a greater price than a crab with missing appendages, hence the portion of the net where a crab is trapped is trimmed to remove the crab safely with all its appendages.

Indigenous Technique of Crab fattening in Ratnagiri district

There has been a trade of *S. tranquebarica* for the last five years along the Konkan Coast, but soft-shelled crabs do not have much value. Therefore, crab collectors of this coast have tried to fatten the crabs using the galvanized iron cage string techniques unsuccessfully due to lack of technical knowledge. The details of these techniques are discussed below.

Crab fattening in galvanized cage:

In this method, eleven soft-shelled crabs (>500 gm) were stocked in a galvanized iron cage (5 x 4 x 4 inches). The crabs were fed with trash fish twice a day. The cage was kept in a mangrove bush adjacent to an estuary with natural water exchange. Eight of the crabs died due to cannibalism. However, the survivors were not hard. The failure of the technique was due to a lack of knowledge regarding the stocking density and feeding of the crabs. The fisherman were advised to stock one crab (>500 gm) per sq. m of cage for better results.

String fattening technique:

In this technique, a single soft crab is tied with nylon twine in such a manner that it can move and eat freely along the estuarine bottom. The other end of the twine is fixed to a mangrove tree. Such soft-shelled crabs are left freely in the estuary and harvested after they become hard. The drawback of this method is that they cannot protect such crabs from poaching and natural calamities.

Marketing:

The trade in crabs is well established in Ratnagiri district. Each taluka has its own marketing strategy for *S. tranquebarica*. It appears that the middlemen are common to all the marketing channels in the district. The crab agent of the region collects the crabs regularly in the morning from the houses of crab collectors. The fishermen living far from the main market carry the crabs at weekly intervals to a crab agent. They use nylon mesh bags for transportation of crabs to the market. They maintain the live crabs over a week in plastic baskets without feeding them at all. This basket along with the crabs is dipped in water for 10 minutes at 5 hour intervals in order to keep the crabs wet. If this is not done the crabs die. In Rajapur taluka a fisherman holds crabs in a wooden box constructed on the bank of the estuary where the water exchange depends on tidal influences. Feeding was restricted as crabs were held by tying their appendages.

The rates of hard-shelled and soft-shelled *S. tranquebarica* range from Rs. 250 to 300 per kg and Rs. 60 to 80 per kg respectively. The rates *S. serrata* weighing more than 250 gm range between Rs. 200 and 250 per dozen. Small sized *S. serrata* (c. 100 gm) are less expensive, and range from Rs. 50 to 60 per dozen.

After collecting the crabs, the agents send them live in bamboo baskets and polyethylene bags to either Mumbai or Goa, from where they are exported live to Singapore and Southeast Asian countries. Sometimes the crab collector is himself the wholesaler.

DISCUSSION

This short term crab monitoring programme gives substantial information on various aspects such as availability of crab (*Scylla* spp.), method of crab collection, abundance of species and indigenous knowledge. Chhapgar (1962) has carried out considerable work on the method of collection and the gear used for crab collection in Mumbai. Some of the gear mentioned by Chhapgar (1962) is used in Ratnagiri district. The survey also aimed at gathering information on the number of crab collectors interested in expanding crab culture/fattening activities. The crab collectors on the Ratnagiri district coast are poor, and the fattening activity could improve their livelihood by fetching a higher price. Large-scale activities are not possible due to poor finances, although fattening in cages made of bamboo or in cemented tanks could help them. There is a need for demonstration of such activities along the coastal region.

The marketing strategy in the district involves a middleman who earns more than the actual crab collector. A

